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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ANDREW P. RITTER, ROBERT HEISTAND II,
JOHN L. GALVAGNI, and SRIRAM DATTA GURU

Appeal 2015-004164
Application 13/832,476
Technology Center 1700

Before GRACE KARAFFA OBERMANN, JAMES C. HOUSEL, and
GEORGE C. BEST, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Pursuant to 35 U.S.C. § 134(a), Appellants² appeal from the Examiner's decision finally rejecting claims 51–75. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

¹ Our decision refers to the Specification (“Spec.”) filed March 15, 2013, Appellants’ Appeal Brief (“Appeal Br.”) filed October 31, 2014, the Examiner’s Answer (“Ans.”) mailed December 24, 2014, Appellants’ Reply Brief (“Reply Br.”) filed April 23, 2015, and our prior Board Decision on Appeal (“Bd. Dec.”) in parent application Ser. No. 10/951,972, Appeal 2012-002815, mailed August 19, 2013.

² According to Appellants, the real party in interest is AVX Corporation. Appeal Br. 1.

STATEMENT OF THE CASE

The invention relates to a method of forming plated terminations on a multi-layer electronic component using a self-determining process by providing electrode layers interleaved between a plurality of dielectric layers, exposing selected portions of the electrode layers, and electrolessly plating or electrochemically depositing termination material on the exposed portions, wherein the exposed portions serve as nucleation points and guides for the termination material. *See* claims 51 and 58. Appellants also teach that additional layers may be plated over the first plated layer, where the layers may comprise different materials. Spec. 22:11–19.

Claims 51 and 72, reproduced below from the Claims Appendix to the Appeal Brief, are illustrative of the subject matter on appeal.

51. A method of forming plated terminations on a multi-layer electronic component using a self-determining process, comprising the steps of:

providing electrode layers, and providing dielectric layers which are respectively interleaved with said electrode layers and which otherwise form an insulative substrate;

exposing selected portions of said electrode layers; and

electrolessly plating termination material on the exposed portions of said electrode layers using said exposed portions of said electrode layers as nucleation points and guides for the termination material.

72. A method of forming plated terminations on a multi-layer electronic component using a self-determining process, comprising the steps of:

providing electrode layers, and providing dielectric layers which are respectively interleaved with said electrode layers and which otherwise form an insulative substrate;

exposing selected portions of said electrode layers; and
electrolessly plating termination material on the exposed portions of said electrode layers using said exposed portions of said electrode layers as nucleation points and guides for the termination material;
wherein said electrolessly plating termination material step comprises electrolessly plating a first metal layer and then repeated electrolessly plating a second metal layer of other metal.

The Rejections

The Examiner maintains, and Appellants request review of, the following grounds of rejection under 35 U.S.C. § 103(a):

1. Claims 51, 53, 57–64, 66–68, 72, 74, and 75 as unpatentable over Takagi³ in combination with Sasaki⁴ or McLoughlin;⁵
2. Claims 54 and 69 over Takagi and Sasaki or McLoughlin, further in view of Farnworth;⁶
3. Claims 55, 56, 65, 70, 71, and 73 over Takagi, either Sasaki or McLoughlin, and Farnsworth, further in view of Igarashi;⁷ and
4. Claim 52 as unpatentable over Takagi and Sasaki or McLoughlin, further in view of Kanai.⁸

³ JP 09190946 A, published July 22, 1997.

⁴ US 5,493,266, issued February 20, 1996.

⁵ US 6,232,144 B1, issued May 15, 2001.

⁶ US 6,413,862 B1, issued July 2, 2002.

⁷ JP 2000-243662, published September 8, 2000.

⁸ JP 08264372 A, published October 11, 1996.

ANALYSIS

Appellants provide a “Reminder Notice” regarding prosecution relative to Trinh (US 8,163,331 B2, issued April 24, 2012). Appeal Br. 14. Therein, Appellants state that the purpose of this Notice is

to provide **clear notice** to the USPTO that the Second Preliminary Amendment was filed on April 23, 2013, in order for claims herein to be made pursuant to 35 U.S.C. § 135 prior to one year from the date on which U.S. PATENT No. 8,163,331 (“Trinh [’]331”) issued, which is April 24, 2012.

Id. Appellants further state that, though Trinh’s claims were not literally copied, they “have otherwise drafted claims which may be considered by the USPTO to be for similar subject matter.” *Id.* Appellants note that, though Takagi was cited during prosecution of the Trinh patent, this did not prevent issuance of the Trinh claims. *Id.* at 15. Appellants request comparable treatment, i.e., recognition of patentability. *Id.*

However, we decline Appellants’ request for the same reason given by the Examiner: patentability of each claim of each application is determined on its own merits. We further note that 35 U.S.C. § 135 (pre-AIA), in relevant part, requires that, for purposes of this statute, claims copied from an issued patent must “the same as, or for the same or substantially the same subject matter as, a claim of an issued patent.” Appellants have stated that their claims may be considered to be for “similar subject matter,” which is different from the statutory standard, “same or substantially the same subject matter.” Moreover, while this statute authorizes the USPTO to institute interference proceedings between a patent application which, in the opinion of the Director, would interfere with an unexpired patent, an interference will generally not be declared unless the conflicting claims are found to be patentable in the pending application. For

the reasons given below, we are not persuaded that the claims in question are patentable.

Rejection 1

The Examiner rejects claims 51, 53, 57–64, 66–68, 72, 74, and 75 under 35 U.S.C. § 103(a) as unpatentable over the combination of Takagi and Sasaki or McLoughlin. Final Act. 2–3. Appellants argue these claims generally as a group, while focusing specifically on limitations of independent claim 72 and dependent claims 61, 64, 67, and 74, which require electroless plating of a second layer of a different metal on an electrolessly-plated first metal layer. Appeal Br. 16. Accordingly, we select claim 72 to decide the appeal as to this rejection. The remaining claims stand or fall with claim 72. 37 C.F.R. § 41.37(c)(iv) (2013).

The Examiner finds Takagi teaches a process as recited in claim 72, except for electrolessly plating more than one terminal layer of the exposed electrodes with different metals in a plating solution. Final Act. 2–3. However, the Examiner finds Sasaki teaches that a multilayered terminal electrode may be formed by electroless plating. *Id.* In addition, the Examiner finds McLoughlin teaches termination layers of nickel and tin/lead may be formed by electroless plating. *Id.* at 3. Therefore, the Examiner concludes it would have been obvious to modify Takagi by applying multiple different metal layers on the exposed internal electrodes by electroless plating, as Sasaki and McLoughlin suggest, with a reasonable expectation of achieving similar success. *Id.*

Appellants contend that the Examiner failed to make any “specific identification . . . as to how the secondary references allegedly show requisite electroless plating of a second layer of different metal on an

electrolessly plated layer of first metal.” Appeal Br. 16. Appellants assert that Sasaki only makes two explicit references to electroless plating, neither of which concerning features 16a, 17a, or 22. *Id.* at 16–17. Appellants further assert that Sasaki’s only electrodes expressly involved with electroless plating are not in consecutively formed, stacked layers. *Id.* at 17. As to McLoughlin, Appellants assert that this reference only expressly mentions electroless plating three times, none of which explicitly referring to layer 34. *Id.* Appellants argue, therefore, that the proposed combination of Takagi with either of Sasaki or McLoughlin fails to establish a prima facie case of obviousness. *Id.* at 16–17.

Appellants’ arguments are not persuasive of reversible error. There is no dispute that Sasaki explicitly teaches electroless plating, albeit in reference to terminal electrodes 16, 17 of Figure 1, rather than terminal electrodes 16a, 17a of Figure 2. Nonetheless, Sasaki teaches that, when referring to Figure 2, elements corresponding to those shown in Figure 1 are denoted by similar reference numerals to omit redundant description. Sasaki 5:49–52. Thus, one skilled in the art would have reasonably understood that the terminal electrodes 16a, 17a of Figure 2, like terminal electrodes 16, 17 of Figure 1, may be formed by electroless plating. Further, terminal electrodes 16a, 17a of Figure 2 have consecutively formed, stacked layers 21, 22. Appellants do not challenge or otherwise dispute the Examiner’s finding that these layers may be formed of different metals. As such, Appellants have failed to persuade us of reversible error in the Examiner’s obviousness rejection over the combination of Takagi and Sasaki.

Turning to McLoughlin, we note Appellants fail to address the Examiner’s findings with any particularity. On that basis alone, Appellants’

argument fails to persuade. Moreover, the Examiner's findings are supported in McLoughlin. For example, McLoughlin's Figures 2 and 3 each teach multilayered (30, 34, 36) terminal electrodes. In addition, terminal layer 30 may be formed by electroless nickel plating. McLoughlin 3:31–48; 4:9–25. Tin or tin-lead layer 34 and silver layer 36 may then be plated over layer 30. *Id.* at 3:5–8; 3:14–23; 3:65–4:6; 4:62–5:6. Although McLoughlin does not explicitly teach that layers 34, 36 are formed by electroless plating, one skilled in the art would have reasonably understood that these layers, like terminal layer 30, may be formed by electroless plating. Again, Appellants have not shown otherwise. As such, Appellants have failed to persuade us of reversible error in the Examiner's obviousness rejection over the combination of Takagi and McLoughlin.

Rejection 2

The Examiner rejects claims 54 and 69 under 35 U.S.C. § 103(a) as unpatentable over the combination of Takagi and Sasaki or McLoughlin, and further in view of Farnworth. Final Act. 3–4. Appellants do not argue these claims, which both require submersing of the component in an electroless copper plating solution to form a copper termination layer. Appeal Br. 19–23. Accordingly, we select claim 54 to decide the appeal as to this rejection. Claim 69 stands or falls with claim 54. 37 C.F.R. § 41.37(c)(iv) (2013).

As we previously held, the limitation of “submersing” the component is construed to mean that the component is completely immersed in and under the surface of the plating solution. Bd. Dec. 6. However, we further held that the Examiner had not reversibly erred in finding submersion of an electronic component in an electroless plating bath was commonly done in the art as evidenced by Farnworth and concluding it would have been

obvious to have immersed Takagi's component during the electroless plating suggested by Sasaki and McLoughlin. *Id.* at 7.

Appellants argue that Farnworth does not concern the formation of external terminations for multilayer electronic components which are used to connect multiple internal active layers with other active layers, but instead electrolessly plates a palladium layer over an existing layer of copper.

Appeal Br. 21. Appellants contend, therefore, that applying Farnworth to Takagi would result in plating a copper layer over an initial base termination layer as opposed to plating the copper layer directly to the exposed internal electrodes. *Id.* at 21–22. In addition, Appellants repeat their argument from the parent application that Farnworth requires the use of masking or etching to isolate locations where the palladium is to be plated. *Id.* at 22.

We are not persuaded by Appellants' arguments essentially for the reasons given by the Examiner in the Final Action and Answer, and in our first prior Board Decision in Appellants' parent application. As indicated in that prior Board Decision, Appellants' arguments attempt to establish nonobviousness by attaching the references individually rather than for what they fairly teach to one of ordinary skill in the art in combination with the prior art as a whole. *See* Bd. Dec. 8. The Examiner relies on Farnworth in support of the finding that submersing electronic components "is commonplace in the art of electroless plating and not for the particular limitation of plating exposed electrodes for termination layers of a capacitor." Ans. 5. The Examiner merely relies on Farnworth for suggesting that electroless plating by submersion in a bath, whereas Sasaki and McLoughlin each already taught the use of electroless plating of terminals on a multilayered electronic component. *Id.* at 6. Thus,

Appellants' arguments fail to address the basis on which Farnworth was relied. Accordingly, Appellants have failed to persuade us of reversible error in the Examiner's obviousness rejection over the combination of Takagi, either of Sasaki and McLoughlin, and Farnworth.

Rejection 3

The dispositive issues regarding this rejection are whether the Examiner reversibly erred (1) in interpreting Igarashi's calcination step as reading on the limitation, "covering the copper termination layer with a resistive layer" of claim 55, and (2) in interpreting Igarashi's conductive resin layer as reading on the limitation, "covering the first layer with resistor-polymeric material" of claim 65. In each instance, we answer this question in the affirmative and, therefore, will not sustain the Examiner's rejection of either of the claims.

The Examiner finds, in relevant part, that Igarashi's calcination step results in a resistive layer covering a metal layer and, therefore, meets the claim limitation of "covering." Ans. 4. Appellants contend, *inter alia*, that Igarashi's calcination at least partially *transforms* a metal layer 3 to create a resistive layer overlying a metal layer, as opposed to the recited step of *covering* the copper termination layer with a resistive layer. Appeal Br. 9. According to Appellants, the Examiner's interpretation of both the claims and Igarashi's teaching are unreasonable. Reply Br. 5–6 (citing *In re Stoller*, 598 Fed. App'x 772 (Fed. Cir. 2015)).

We have considered the respective positions articulated by the Examiner and Appellants, and find a preponderance of the evidence favors Appellants. It is axiomatic that during examination proceedings, claims are given their broadest reasonable interpretation consistent with the

Specification. *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007); *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). An applicant seeking a narrower construction must either show why the broader construction is unreasonable or amend the claim to expressly state the scope intended. *In re Morris*, 127 F.3d 1048, 1057 (Fed. Cir. 1997).

We note that neither the Examiner nor Appellants proffer a definition for the term, “covering.” We conclude that this term, as a transitive verb, means “to lay or spread something over . . . to place or set a cover or covering over.”⁹ This definition is consistent with Appellants’ Specification which teaches electroplating a resistive alloy over a layer of metallic plating (Spec. 23:13–15) or covering a layer of metal with a resistor-polymeric material (*id.* at 23:10–12). Appeal Br. 8–9. In contrast, Igarashi applies two metal layers 3, 4, and then transforms at least a portion of metal layer 3 to an oxide via calcination to create an intermediate layer between metal layers 3, 4. Thus, although the resulting intermediate layer covers the unconverted portion of metal layer 3, it is unreasonable to interpret Igarashi’s formation of this intermediate layer as “covering the metal layer with a resistive layer.” The formation of the intermediate layer was not done by the expressed action of the transitive verb, “cover”, i.e., this intermediate layer is not laid, spread, placed, or set over the metal layer, but is created in situ from a portion of the metal layer itself. Accordingly, we hold that the Examiner’s interpretation of Igarashi in this regard is unreasonable and erroneous.

⁹ <https://www.merriam-webster.com/dictionary/cover> (last visited January 13, 2017) (definitions 3 and 5).

As to claim 65, the Examiner finds, in relevant part, that Igarashi's conductive resin layer as reading on the limitation, "covering the first layer with resistor-polymeric material." Ans. 4. The Examiner further finds that Igarashi's "conductive resin layer [5] having resistive properties would meet the claimed resistor-polymeric material as resin would satisfy the 'polymeric' limitation." *Id.* Appellants note Igarashi teaches a conductive resin layer having a resistivity less than 10 Ω/cm . Appeal Br. 9. In addition, Appellants argue that Igarashi's conductive resin layer is not an alternative to the calcined intermediate layer, but rather applies the conductive layer over the second metal layer 4 to address issues resulting from defects arising from the calcination process. *Id.* at 9–11.

Appellants' arguments are persuasive of reversible error in the Examiner's finding that Igarashi's conductive resin meets the claim 65 limitation for covering a first metal layer with a resistor-polymeric material. Initially, we note that the purpose of Igarashi's layer, as Appellants argue, is to remedy the effect of defects that may form in the second metal layer 4 during the calcination process of the first metal layer 3. Igarashi ¶¶ 9–10. Igarashi's solution is to apply an electrically conductive resin having a resistivity less than about 10 Ω/cm , wherein this conductive resin includes a conductive metal. *Id.* at Abstract. Thus, the clear intent of Igarashi's conductive resin layer is to conduct, rather than resist, electricity. In contrast, Appellants' polymeric material is a resistor, i.e., an electrical resistor. Accordingly, we hold that the Examiner's finding that Igarashi's conductive resin layer meets the claim 65 limitation for a layer of resistor-polymeric material is erroneous.

Thus, the Examiner has not set forth a factual basis which is sufficient to support a prima facie case of obviousness of Appellants' invention of claims 55 and 65. *See In re Warner*, 379 F.2d 1011, 1017 (CCPA 1967) ("A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art"). Accordingly, we will not sustain the Examiner's rejection of claims 55 and 65, and of dependent claims 56, 70, 71, and 73.¹⁰

Rejection 4

Turning to claim 52, depending from claim 51 and requiring the step of electroless plating is followed by an electrochemical process, the Examiner finds Kanai teaches electrolessly plating exposed electrodes followed by electrolytic plating. Final Act. 5. The Examiner concludes it would have been obvious to have modified Takagi's process in combination with Sasaki or McLoughlin by plating Takagi's external electrodes by electroless plating followed by electrolytic plating with a reasonable expectation of success. *Id.*

Appellants argue Kanai fails to remedy the deficiencies of Takagi in view of Sasaki or McLoughlin, further in view of Farnworth relative to claim 51. However, the Examiner does not cite to Kanai to remedy alleged deficiencies in the prior art relative to claim 51, but specifically to suggest the sequential use of electroless and electrolytic plating. Appellants'

¹⁰ We note Appellants state that independent claims 37 and 51 of parent application Serial No. 10/951,972 "includes exactly the same limitation regarding 'covering the copper termination layer with a resistive layer.'" Appeal Br. 7. Upon further prosecution in this application, the Examiner and Appellants should consider whether conflicting claims exist between these applications which raise double patenting issues.

argument, therefore, is not persuasive as to reversible error in the Examiner's conclusion as to the obviousness of claim 52.

DECISION

Upon consideration of the record, and for the reasons given above and in the Final Action and the Answer, the decision of the Examiner rejecting claims 51–54, 57–64, 66–69, 72, 74, and 75 under 35 U.S.C. § 103(a) as unpatentable over Takagi, and either of Sasaki and McLoughlin, alone or further in view of Farnworth or Kanai, is *affirmed*.

However, for the reasons given in the Appeal and Reply Briefs, the decision of the Examiner rejecting claims 55, 56, 65, 70, 71, and 73 under 35 U.S.C. § 103(a) as unpatentable over Takagi, either of Sasaki and McLoughlin, Farnworth, and Igarashi is *reversed*.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1).

AFFIRMED-IN-PART